

## Notice of Allowability

Application No.

10/692,287

Examiner

Lawrence B. Williams

Applicant(s)

AKOPIAN, DAVID

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 02 July 2007.
2. ☒ The allowed claim(s) is/are 2-3, 6-22, renumbered as 1-2, 3-19.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Francis J. Maguire on 13 July 2007.

The application has been amended as follows:

- a.) In claim 7, line 17, delete "4,".
- b.) In claim 8, replace the phrase, "according to claim 1" with "according to claim 3".
- c.) In claim 9, replace the phrase, "according to claim 1" with "according to claim 3".
- d.) In claim 11, replace the phrase, "according to claim 1" with "according to claim 3".

**REASONS FOR ALLOWANCE**

2. The following is an examiner's statement of reasons for allowance: The instant application discloses a method and apparatus for determining the correlation phase between a signal received at a receiver and a replica sequence. A search of prior art records has failed to teach or suggest alone or in combination:

“ method for determining a correlation phase between a signal received from a satellite at a receiver and an available replica sequence comprising using a matched filter to check various correlation phases, said matched filter multiplying samples of said received signal with samples of said replica sequence and summing the resulting products to obtain a correlation value for a specific correlation phase, said method further comprising shifting samples of said received signal and of said available replica sequence relative to each other for each correlation phase which is checked, and using results obtained in the calculations for one correlation phase by said matched filter for calculating a subsequent correlation phase, and determining a current position of said receiver, wherein said received signal comprises a binary sequence, wherein possible values of said binary sequence are +1 and -1, wherein  $C_i$  constitutes a determined correlation value for an  $i^{\text{th}}$  checked correlation phase, wherein  $N$  is a length of said binary sequence, wherein  $x_{j+i}$  constitutes a  $j$ th sample of said received signal for said  $i^{\text{th}}$  correlation phase, wherein the samples of said replica sequence are not shifted for different correlation phases which are to be checked, wherein  $r_j$  constitutes a  $j$ th sample of said replica sequence, wherein a set  $J_+$  comprises the indices  $j$  for which  $(r_j = 1 \ \& \ r_{j-1} = 1) \ \text{OR} \ (r_j = -1 \ \& \ r_{j-1} = -1)$ , and wherein a correlation value  $C_{i+1} = -C_i - r_0 x_i + r_{N-1} x_{i+N} + \sum_{j \in J_+} 2 * r_j x_{j+i}$  ” as disclosed in claim

1.

“method for determining a correlation phase between a signal received from a satellite at a receiver and an available replica sequence comprising using a matched filter to check various correlation phases, said matched filter multiplying samples of said received signal with samples of said replica sequence and summing the resulting products to obtain a correlation value for a specific correlation phase, said method further comprising shifting samples of said received signal and of said available replica sequence relative to each other for each correlation phase which is checked, and using results obtained in the calculations for one correlation phase by said matched filter for calculating a subsequent correlation phase, and determining a current position of said receiver, wherein said received signal comprises a binary sequence, wherein possible values of said binary sequence are +1 and -1, wherein  $C_i$  constitutes a determined correlation value for an  $i^{\text{th}}$  checked correlation phase, wherein  $N$  is a length of said binary sequence, wherein  $x_{j+i}$  constitutes a  $j^{\text{th}}$  sample of said received signal for said  $i^{\text{th}}$  correlation phase, wherein the samples of said replica sequence are not shifted for different correlation phases which are to be checked, wherein  $r_j$  constitutes a  $j^{\text{th}}$  sample of said replica sequence, wherein a set  $J_+$  comprises the indices  $j$  for which  $(r_j = 1 \ \& \ r_{j-1} = -1) \text{ OR } (r_j = -1 \ \& \ r_{j-1} = 1)$ , and wherein a correlation value  $C_{i+1} = C_i - r_0 x_i + r_{N-1} x_{i+N} - \sum_{j \in J_+} 2 * r_j x_{j+i}$ ” as disclosed in claim 6.

“method for determining a correlation phase between a signal received from a satellite at a receiver and an available replica sequence comprising using a matched filter to check various correlation phases, said matched filter multiplying samples of said received signal with samples of said replica sequence and summing the resulting products to obtain a correlation value for a specific correlation phase, said method further comprising shifting samples of said received

Art Unit: 2611

signal and of said available replica sequence relative to each other for each correlation phase which is checked, and using results obtained in the calculations for one correlation phase by said matched filter for calculating a subsequent correlation phase, and determining a current position of said receiver, wherein said received signal comprises a binary sequence, wherein possible values of said binary sequence are +1 and -1, wherein  $C_i$  constitutes a determined correlation value for an  $i^{\text{th}}$  checked correlation phase, wherein  $N$  is a length of said binary sequence, wherein  $x_{j+i}$  constitutes a  $j$ th sample of said received signal for said  $i^{\text{th}}$  correlation phase, wherein the samples of said replica sequence are not shifted for different correlation phases which are to be checked, wherein  $r_j$  constitutes a  $j$ th sample of said replica sequence, wherein a set  $J_+$  comprises the indices  $j$  for which  $(r_j = 1 \ \& \ r_{j-1} = 1) \ OR \ (r_j = -1 \ \& \ r_{j-1} = -1)$ , wherein a set  $J_-$  comprises the indices  $j$  for which  $(r_j = 1 \ \& \ r_{j-1} = -1) \ OR \ (r_j = -1 \ \& \ r_{j-1} = 1)$ , and wherein a correlation value  $C_{i+1}$  for the  $(i+1)^{\text{th}}$  correlation phase is calculated:

$$C_{i+1} = -C_i - r_0 x_i + r_{N-1} x_{i+N} + \sum_{j \in J_+} 2 * r_j x_{j+i}, \text{ if the size of said set } J_- \text{ is larger than the size of}$$

said set  $J_+$ , and as:

$$C_{i+1} = C_i - r_0 x_i + r_{N-1} x_{i+N} - \sum_{j \in J_-} 2 * r_j x_{j+i}, \text{ if the size of said set } J_+ \text{ is larger than the size of}$$

said  $J_-$  as disclosed in claim 7.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 2611

### CONCLUSION

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammad can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams



lbw

July 13, 2007



MOHAMMED GHAYOUR  
SUPERVISORY PATENT EXAMINER